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ABSTRACT

This study used data from the National Postsecondary Student Aid Study (NPSAS) for 1989-90 and 1995-96 to examine the awarding of need-based and merit student financial aid to entering college freshmen by private four-year colleges. Regression analysis used the amount of institutional need-based grant awarded to an individual freshman as a dependent variable and five independent variables: (1) the institution's tuition and fees; (2) amount of financial need of a student; (3) family income; (4) Scholastic Assessment Test (SAT) scores; and (5) under-represented or over-represented minority status. These variables explained less than 20 percent of the variance in awarding need-based aid in 1989-90 and about 25 percent in 1995-96, suggesting that there are other significant factors determining need-based aid. The same analysis with merit grant aid and the same five independent variables found these variables did not account for the observed variance, although SAT scores were the most significant determinant. Family income was not a predictive factor suggesting that merit aid is not used to entice the enrollment of wealthier students. Implications of a growing inequality in financial aid resulting from the practice of financial aid leveraging strategies based on differential price discounting are addressed. (Contains 17 references.) (DB)

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Possible Long-Term Effects of Awarding Merit Aid

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Dolores Vura
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Possible Long-Term Effects of Awarding Merit Aid

The present study has analyzed the National Postsecondary Student Aid Study (NPSAS) 1989-90 and 1995-96 data and has brought some empirical evidence to bear on the debate regarding the long-term effects on society when institutions continue to compete for students by practicing financial aid leveraging strategies based on differential price discounting. The study found that while institutions are still strongly committed to the need-based financial aid operation, as more preferential packaging takes place within the need-based frame and large amounts of merit grant aid are given to a small number of the targeted students, it is most likely that we are creating a growing inequality in our aid awarding system.

"Possible Long-Term Effects of Awarding Merit Aid"

Introduction

Over the past decade, higher education institutions have struggled to cope with an escalation of market competition for students where aid-leveraging strategies based on differential price discounting have become an increasingly common practice. Prospective students and their families have responded to the changes by becoming more skillful in negotiating with admissions and financial aid offices. As institutional non-need based grants grow, there is an increasing concern about "the death of need based financial aid system" (Ehrenberg and Murphy, 1995; The College Board, 1997), implying that aid that should be used to meet the financial needs of deserving students may be redistributed in the form of merit aid to affluent students. This may result in a significant reduction of educational opportunities for students with the greatest financial needs since research indicates that change in net cost (cost after financial aid subtracted) has a considerable effect on enrollment rates of students from low-income families (Heller, 1997; McPherson and Schapiro, 1998). The present study analyzes the National Postsecondary Student Aid Study (NPSAS) 1989-90 and 1995-96 data and attempts to bring additional empirical evidence to the debate on what will be the long-term effects on society when institutions continue to practice financial aid leveraging strategies.

Background

The literature points out several underlying reasons why financial aid has become a major tool to compete for students in recent years. Over the last two decades, tuition

continued to increase more rapidly than inflation or family income (The College Board, 1998a). Federal and state student grant aid has failed to keep pace with this rapid increase in tuition prices (The College Board, 1998b). As a result, students have had to incur more loans and institutions have made up the remaining differences with institutional funds (Gladieux and Hauptman, 1995; Hauptman, 1997). Recycling tuition revenue in the form of institutional grant support has reached alarming levels at many institutions (Lapovsky, 1998). As a result, net tuition revenues have grown at a decreasing rate.

This financial state was aggravated by the shortfall of tuition revenues due to the declining college enrollment trend of high school graduates in the early 1990s. In addition, some studies have documented a significant shift in admission applications by affluent families from the private to the public sector (Day, 1997; McPherson and Schapiro, 1998). Moreover, as the ethnic composition of the high school graduates has become more diverse (Zuniga, 1997), a number of institutions that attempt to keep student ethnic and racial profiles as close to representative of the general population as possible have faced fierce competition for a limited number of qualified under-represented minority students.

All these factors have contributed to the need for institutions to optimize the use of available institutional aid resources in order to maximize net tuition revenues and to ensure the quality of enrolling the students desired by the institution. As a result, higher education institutions have adopted the practice of financial aid leveraging or tuition discounting strategies, which is commonly defined as "any strategic differentiation of institutional grant aid to affect the matriculation behavior of specific student groups to

produce the desired results for net revenue or student profiles" (Day, 1997). In this context, institutional grants are awarded based on students' price responsiveness (price elasticity) and their value to the institution, rather than their financial need. The focus of financial aid operation shifts from a long-term, equity-driven, fund distribution perspective to a short-term, efficiency-driven, revenue maximization perspective (Baum, 1998).

Institutions' Strategies

In the process of implementing financial leveraging strategies, various tactics have been invented by enrollment management professionals. The tactics discussed by various studies elsewhere (Day, 1977; McPherson and Schapiro, 1998) can be summarized into two major categories: 1) practices within the need-blind admissions and need-based financial aid framework; and 2) practices based on need-conscious admissions and non-need based financial aid. Financial need is a computational result of total cost of attendance minus family contribution which is determined by a complex formula, using a number of factors such as parents' as well as a student' s income and assets, and the number of children in college.

The most simplistic form of the need-conscious admissions and non-need based financial aid strategy can be explained, for example, by the two dimensional table approach. Admissible applicants are placed in one of nine table cells according to their SAT scores (high, middle, and low SAT group) and their financial need (high, middle, and low/no need group). The institution awards competitive merit aid to those in the low/no need and high SAT category, hoping that merit aid will entice them to enroll.

Merit aid could be financed by denying admissions to those who belong to the high financial need and admissible-but-low SAT group and shifting their institutional grants to wealthier students with stronger academic credentials. This strategy is expected to raise (1) net tuition revenues and (2) academic competitiveness of the institution measured by average SAT scores. The actual implementation of this strategy, however, involves complex econometric modeling to determine the optimum amount of merit aid given and the appropriate number of students to be affected both positively as well as negatively by the strategy.

A number of institutions that claim to commit themselves to need-blind admissions have invented several ways to implement aid leveraging strategies within the need-blind need-based financial aid scheme. "Preferential packaging" strategies are perhaps most commonly employed by these institutions including the most prestigious schools (Mulugetta, Saleh, and Mulugetta, 1997). Among financially needy students, those who demonstrate special abilities or profiles most desirable for the institution would receive more attractive financial aid packages --- usually more grants and less loans/work --- than their peers who are viewed as less desirable for the institution, so that more enticing grant aid packages could persuade these targeted students to enroll. "Gapping" and "admit-deny" strategies are similar to preferential packaging, but more aggressive. "Gapping" is a strategy of not meeting the full need of less desired students, and "admit-deny" is a strategy of employing need-blind admission but completely denying aid for those with higher need and less qualifications.

Some schools have considered employing an even more aggressive strategy such as "preferential need analysis." Currently, need analysis to compute expected family

contributions (EFC) is largely based on either FM (Federal Methodology or Congressional Methodology) or IM (Institutional Methodology). Private institutions often adopt IM rather than FM, since IM often includes home equity or non-custodial parental incomes in EFC calculations. This tends to produce larger EFCs than the EFCs computed by FM and, therefore, demands smaller institutional grant expenditures. Through preferential need analysis, however, the institution applies FM to need analysis of a particular group of highly recruited students, so that they can demonstrate a higher financial need in comparison to less desired students whose EFCs are computed by IM. Obviously, when this strategy takes place, highly recruited students would receive more institutional grant than other students, without violating the institution's commitment to the need-based financial aid scheme.

Research Questions

When more institutions adopt the strategies described above, there is a significant concern that we may be creating a society where wealthier students are more likely to be accepted for admissions and financially rewarded in the form of merit aid, than their less wealthier peers. This may mean that we are shifting our policy away from the "social contract" philosophy (Clotfelter, 1996), promising equal educational opportunities for all and guaranteeing that financial circumstances would not be a hindrance to access, choice, and persistence to achieve educational goals. The present study, therefore, examines the extent to which institutional need-based, as well as non-need based, grants are awarded based on students' financial need in comparison to other variables, such as income, racial background or SAT scores. It

also tests whether there are significant changes in the way private institutions have awarded grants over the years.

Data

The data from NPSAS (National Postsecondary Student Aid Study) 1989-90 and 1995-96 were analyzed to answer these research questions. These large data sets consist of both student information extracted from registration, admissions, enrollment, tuition and financial aid records and survey data that were collected through phone interviews with students and selected parents. In the 1996 study, for example, 55,665 students' records were obtained from 836 participating institutions that were selected based on a two-stage stratified sampling design. In addition, 12,798 students and 18,530 were interviewed by phone in phase I and phase II, and unweighted response rates were 26% and 72% respectively. The sampling and data collection designs were somewhat different, but comparable to the 1990 study.

The present study has focused on freshmen, who enrolled in private non-profit four-year institutions as full-time undergraduates since they are considered as a "leading indicator" of the trend in tuition discounting and financial aid leveraging (NACUBO, 1998). The following variables were used in the present study.

1) Institutional need-based grant and scholarship --- the amount of institutional grants that were based entirely on need, or partly on need and partly on merit, received during the academic year was examined.

2) Institutional non-need based grant and scholarship --- the amount of institutional grants and scholarships that were based entirely on merit or other circumstances not related to need during the academic year was examined.

3) Net tuition income --- amount of tuition and fees (attendance adjusted) - total institutional grants.

4) Cost of attendance charged at the NPSAS institution --- total student budget (attendance adjusted) at the NPSAS including tuition and fees, books and supplies, room and board, transportation and personal expenses.

5) Family income --- total income reported in a prior tax year for both independent students and parents of dependent students.

6) Family income category --- Three income groups were formed: Low Income (Less than $40K); Middle Income ($40K - $80K); and High Income (over $80K) in 1996 constant dollars.

7) Financial need --- financial need equals total cost of attendance minus EFC (Expected Family Contributions). EFC is calculated based on FM (Federal Methodology) rather than IM (Institutional Methodology).

8) SAT scores --- SAT combined score, derived as either the sum of SAT verbal and math scores or the ACT composite score converted to an estimated SAT combined score.

9) College grouping --- A dichotomous variable --- four-year doctorate granting vs. four-year non-doctorate granting --- was used to subgroup private non-profit four-year institutions.

Statistical Models

In order to examine Questions 2a, 2b, 3a, 3b, 4a and 4b, the following statistical model was used:

Model I: $Y1 = \beta0 + \beta1*X1 + \beta2*X2 + \beta3*X3 + \beta4*X4 + \beta5*X5 + e$

Here:

Y1 … Amount of institutional need-based grant a student received

X1 … Tuition and fees of the NPSAS institution where a student enrolled

X2 … Amount of financial need of a student (Cost of attendance - Expected Family Contribution)

X3 … Family Income (dependent and independent students combined)

X4 … SAT scores (math and verbal scores combined; freshmen only)

X5 … A dichotomous variable to distinguish between under-represented minorities (Blacks, Hispanics, Native Americans/Alaskans) and non-under-represented minorities (Caucasians, Asians and Unidenfied)

$\beta0$ … $\beta5$ … Regression coefficients

Model II

Y2 … Amount of institutional non-need-based grant a student received

The rest of the variables used for these models is the same as Model I.

Results: Descriptive Statistics

Over the six-year study period, the four-year private institutions experienced an increase in total tuition and fee income from freshmen by a little over 80%, from $3.2 to $5.9 billion in 1996 dollars. Non-doctorate granting institutions (Non-Ph.D. GI)

experienced a 91% growth in tuition income, while doctorate granting universities (Ph.D. GI) showed a 69% growth. The rapid growth of tuition income of Non-Ph.D. GI was largely attributed to a rapid expansion in freshman enrollment from 181,000 to 319,000 (+76%), and a moderate growth (8.5%) in average tuition rate from $9,800 to $10,650. In contrast, Ph.D. GI experienced a significant increase in average tuition by more than 17% from $13,100 to $15,400, which compensated for only a moderate expansion of enrollment from 110,000 to 159,000 (+44%).

In 1990, 11% of tuition income or $349.5 million was discounted by institutional need-based grant aid and another 4% or $133.6 million, by merit aid. The remaining $2.743 billion, just about 85% of total tuition paid, was net tuition income for the institutions. Both institutional need-based grants and merit grants grew rapidly between 1990 and 1996, by 242% and 219%, respectively. In 1996, the total amount of need-based grants grew to $1.114 billion, which equaled a 19% tuition discounting. Non-need based grant reached the $456.9-million level, which discounted the tuition by 8%. In 1996, net tuition income was approximately $4.3 billion, which accounted for 73% of total tuition payments. The percentage of net tuition income to total tuition paid, therefore, decreased from 85% to 73% over the six-year study period, while the percentage share of need-based and merit grants increased from 11% to 19%, and from 4% to 8% respectively.

When the data were cut by institutional type, somewhat different patterns appear for non-Ph.D. granting and Ph.D. granting institution. For non-Ph.D. GI, merit aid grew by 283%, which was faster than the growth of need-based grants, 211%. In contrast, for Ph.D. GI, need-based increased more than merit aid, 229% in comparison to 179%.

We examined the percentage growth in the number of freshmen receiving institutional grants in 1990 in comparison to 1996. The number of need-based grant recipients increased by 148% from 88,000 to 218,000, whereas the number of merit aid recipients grew only by 89% from 52,000 to 98,000. The percentage ratio of need-based grant recipients to total freshman enrollment expanded from 30.1% in 1990 to 45.5 % in 1996. The percentage ratio of merit grant aid recipients, however, grew only by 2.7% from 17.8% to 20.5% during the same period. Similar trends are observed for both non-Ph.D. granting and Ph.D. granting institutions. These observations are somewhat puzzling since the growth rates of need-based and merit grant aid in CONSTANT DOLLARS were almost comparable, but the growth rate in the RECIPIENT NUMBER was significantly smaller for the merit aid recipient group than that observed for the need-based grant recipient group.

We examined ~~that~~ an amount of institutional grant awarded per recipient in 1996 constant dollars. The average merit grant aid changed from $2,600 to $4,700, resulting in an 81% growth. In contrast, the average of need-based grant per recipient increased only by 28.6% from a little less than $4,000 to $5,100.

At this point, it becomes apparent that private institutions tend to award merit grant aid to a small number of targeted students and offer a relatively large amount of grant per recipient. It is an interesting contrast that institutional need-based grants are awarded to a much larger segment of the student population. The growth rate of the average amount of merit aid offered over the six-year period was almost three times as fast as the growth rate of the average need-based grant per recipient. This implies that if a financial aid war escalates in the higher education market, institutional grant aid - recycled tuition revenue

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in the form of merit aid - may offer tremendous benefits to a handful of "winners." This finding seems to support the notion of "the winner-take-all society" (Frank and Cook, 1995) where only those regarded as the best are rewarded, probably creating inequalities in society.

Following this argument, the present study has examined how institutional need-based grants and merit grant aid were distributed across different income groups in 1990 and 1996. Three income groups were formed: Low Income (total family income less than $40,000 in 1996 constant dollars); Middle Income (between $40,000 and $80,000); and High Income (greater than $80,000). As indicated in Table 2 and Graph 4, in 1996, $143 million-worth of need-based grant was awarded to the High Income Group, while Low Income and Middle Income Groups received $485 million and $486 million respectively. The High Income Group experienced a tremendous increase in institutional need-based grant, that is, a 460% increase over the six-year study period. The growth in need-based grant aid for the Low and Middle Income Groups were 179% and 224% respectively.

In terms of merit grant aid, $148 million, $213 million, and $96 million were allocated to Low, Middle, and High Income Groups in 1996. The real growth rates from 1990 to 1996 were 262%, 227%, and 249% in that order.

We examined average institutional grants offered to freshman recipients by income group. In1996, a student from the Middle Income Group received the highest amount of institutional need-based grant, $5,200, followed by a low-income student, $5,100 and a high-income freshman, $4,700. In 1990, the average grant in constant dollars was $3950, $4,000, $3800 for Low, Middle, and High Income Group in that order. This is partly

because low income students are eligible for federal and state entitlement programs, such as Pell Grant and therefore, tend to receive smaller institutional grants in their financial aid package in comparison to middle income students.

It is most intriguing to observe that in 1996, the High Income Group received the highest amount of merit grant aid, approximately $5,000 per recipient, while the Middle Income Group got the second highest amount, $4,750, and the Low Income the least of $4,400 per student. In 1990, the average merit grant aid amount expressed in constant dollars was $2,430, $2,440 and $3,200 for Low, Middle, and High Income Group respectively. The six-year growth rate was the highest for the Middle Income Group (94%), followed by Low Income (79%) and High Income Groups (54%).

The descriptive analysis implies that income might be a significant determining factor in awarding merit grant aid. However, the study needs to conduct multivariate analysis to examine how much income and other factors (financial need amount, tuition and fee charge of an enrolling institution, SAT composite scores, and racial background) may affect the grant aid awarding process.

Results: Regression Analysis

We ran regression analysis, using the amount of institutional need-based grant awarded to an individual freshman as a dependent variable and five independent variables. Although the model we tested here is statistically significant, the five independent variables explained less than 20% of the variance in 1989-90 and about 25% in 1995-96. It indicates that there may be other significant factors determining aid

awards and/or a lot of awards are individually adjusted based on financial aid counselors' "professional judgement."

In both the 1989-90 and the 1995-96 NPSAS studies, demonstrated financial need (the difference between the cost of attendance and the expected family contribution) and tuition charge are significant determinants in awarding need-based grants.

Some may wonder why the tuition charge becomes an important factor even after controlling a student's financial need. If Student A enrolls at a low cost institution and demonstrates $10,000 financial need ($10,500 cost attendance - $500 family contribution), it is most likely that this student is eligible for federal/state aid programs. As a result, the student's financial need would be met by entitlements and the institution may not have to offer him/her any institutional aid. In contrast, if Student B enrolls at a more expensive institution and demonstrates the same $10,000 need ($20,500 cost of attendance - $10,500 family contribution), the student would not be eligible for federal grant programs and the institution would need to provide its own grant funds to meet the need of this student.

SAT composite scores are a significant factor in awarding need-based grant aid in 1996, but not in 1990. This is not a surprise, as explained before. Most probably, many private institutions have recently adopted the preferential packaging strategies and offered better financial aid packages (more-grant and less-loan deal) to brighter freshmen. Therefore, this finding has empirically supported the widely accepted notion that merit aid awarding has been taking place within the need-based financial aid frame in the recent years.

Total family income turned out to be a significant determinant of awarding need-based grant aid in 1990, but not in 1996. The negative beta coefficient indicates that in 1990, the institutions were likely to offer more institutional need-based grant aid to freshmen from lower income families even after financial need was controlled for.

Some may wonder why this is so. Before financial aid games became prevalent, the financial aid system, for the most part, operated based on the "social contract" philosophy (Clotfelter, 1996), promising equal educational opportunities for all and guaranteeing that financial circumstances would not be a hindrance to access, choice, and persistence to achieve educational goals. Many institutions, particularly those with larger endowments, had a "low-income" self-help differential scheme, which reduced loan and work, and substituted more institutional grants for the students who came from socially disadvantaged sectors. As the student aid war escalated and aid amount has become determined by the individual student's quality, institutions' commitment to continue to practice "low-income" self-help differentials seems to have decreased over all. This trend was also observed when a regression analysis was run separately for non-Ph.D. granting and Ph.D. granting institutions.

We also ran regression, using amount of merit grant aid as a dependent variable and the same independent variables as described above. The five independent variables did not account for the variance very successfully, indicating that the criteria for awarding merit aid are specific for individual institutions. However, it is clear that SAT scores were the most significant determinant in awarding merit aid to freshmen. Family income did not reveal a strong explanatory power. It means that income per se would not determine the merit aid amount offered to students and has failed to support the argument

that merit aid may be solely used to enroll wealthier students. However, given the fact that SAT scores are moderately correlated with family income (r2 = .189 in 1990 and r2 = .20 in 1996), there is still a concern that merit grant aid tends to benefit a relatively small number of "winners" who are most likely to come from "winning" families.

When two separate regression analyses were run for non-Ph.D. and Ph.D. granting institutions, SAT scores were significant for non-Ph.D. schools while this turned out to be insignificant for Ph.D. granting institutions. This is partly because Ph.D. granting institutions attempt to remain their financial aid operations within the need-based financial aid frame, and partly because these schools may consider awarding merit aid based on various qualities students demonstrate rather than just a single academic measure such as SAT scores.

Summary and Conclusion

What will be long-term effects on society when institutions continue to practice financial aid leveraging strategies? Answers to this question are multiple and complex. One thing the present study has made clear is that while institutions are still strongly committed to the need-based financial aid operation, as more preferential packaging takes place within the need-based frame and large amounts of merit grant aid are given to a small number of the targeted students, it is most likely that we are creating a growing inequality in our aid awarding system. This trend seems even more encouraged by the shift in federal student aid policy --- targeting toward middle and upper-middle income families through tremendous increases in unsubsidized loans and tax relief. We need to

continue studying what long-term effects this growing inequality in financial aid is bringing to our society.

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